Fairfax County VIRGINIA

SECTION 2

STRATEGIC DIRECTIONS AND INITIATIVES

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FEATURED IN THIS SECTION

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2.1 STATEMENT OF DIRECTION

Keeping up with the pace of change in technology and using technology effectively to meet end-user requirements and expectations are still the most critical challenges facing information technology providers. Advances in technology can enable the workforce to provide better and faster service at a reduced cost, but changes in technology can be expensive and complex. New technology must be adopted carefully and integrated wisely into the existing technology infrastructure of an organization in order to maximize the benefits in a cost-effective manner.

The following five initiatives address the County's objective to provide effective, efficient and customer-oriented access to data and services for constituents and for internal government customers on an enterprise scale.

2.2 E-GOVERNMENT

The e-Government initiative uses enabling technology for Fairfax County Government to provide a 24-hour operation. The Fairfax County Web Site, Kiosks, Interactive Voice Response (IVR) systems and Cable TV platforms are integrated into a single strategy for access to information and services in the County's goal to provide a "*government without walls, doors, or clocks*." In addition to the on-going efforts to enhance the look, feel and navigation of the web interface and deploying new services and transactions, the county has achieved much success and acclaim for its e-government thrust in integrating the WEB, IVR and Kiosk platforms in to provide a complete public access to services and programs. In FY 2006, the county will continue its efforts to add new services to the e-government channels, including new transactions and e-payments. The e-government program will also continue to work with the Commonwealth of Virginia and federal government agencies in developing web services standards which will enable cooperative access and seamless integration of information for presentation of information and services regardless of the origin or the source.

Major FY 2005 accomplishments for e-Government initiatives included new applications such as Child Care Training, My Neighborhood, Kids & Teens Portal Area, Seniors and Disability Portal Area, Crime Mapping, DTA E Pay, enhancements to the E-Services page, and the implementation of content management and a new Search application. We will be expanding e-notification and alerting system to the general public called Community Emergency Alert Network (CEAN), which aides in communicating critical information via messages through web and e-mail to computers, laptops, PDAs, cell phones and other mobile communications devices. We also implemented two new kiosk locations. The County continues to work with Homeland Security on regional interoperability initiatives to establish policies, procedures and protocol for the exchange of data supporting emergency response.

Goals for FY 2006 are to continue building new e-service transactions and e-payments, continue improvements for navigation and better synchronization of content, add more interactive features to the WEB site, and to enhance and support existing applications. DIT will continue to streamline the architectures of IVR, Kiosk, Web, Infoweb and Wireless technologies with the ultimate goal being the enhancement of both the information and

infrastructure architectures supporting e-government initiatives, which will facilitate the delivery of integrated and accurate information to citizens via multiple platforms along with an implementation of additional web search capabilities.

Customer's Served:

Kiosk: over 8,363,493 "Screen Touches" to date or over 334,540 total users
IVR: 881,800 total calls
Web: 1,100,000 visits per month

Information and Services Available

Adult education classes	*Web*
Becoming a child-care provider	*Web, Kiosk*
Board Meeting minutes (searchable)	*Web, Kiosk*
Budget information and approved budget	*Web*
Bus tour schedule	*Web, Kiosk*
Child-care provider list	*Web, Kiosk*
Collection of household trash & recyclables	*IVR, Kiosk*
County Code – full text	*Web*
County demographics	*Web, Kiosk*
County maps, scrollable, printable	*Web, Kiosk*
Courts - Circuit, General District, and Juvenile	*Web, Kiosk, IVR*
Crime statistics, Wanted List, Neighborhood Watch	*Web*
DTA EPay	*Web*
DTA Tax Evaders	
HIPAA	
Institute for Earl Learning Training	
iCARE DTA Real Estate Assessment and Information Query	*Web*
Library Graded Reading Lists	
Library Picture Books	
Offsite	*Web*
Public Meeting Calendar	
Community Emergency Alert Network System (CEAN)	
Fire & Rescue Media Information	*IVR, Kiosk*
Health information	*Web, IVR, Kiosk*
Housing information	*Web, IVR, Kiosk*
Inspection scheduling status	*IVR, Kiosk*
Information for victims of crime	*IVR, Kiosk*
Job opportunities	*Web, Kiosk*
Library information line	*IVR*
Multi-jurisdictional information	*Kiosk*
Newcomer information	*Web, IVR, Kiosk*
Parks/Recreation information	*Web, IVR, Kiosk*
Public safety information	*Web, IVR, Kiosk*
Real estate property assessment & tax information	*Web, IVR, Kiosk*
Seniors information and programs	*Web, IVR, Kiosk*

Doing Business with the County

Access Health Department food inspections database	*Web*
Access GIS aerial photography with pan and zoom	*Web*
Apply for County jobs	*Web, Kiosk*

Apply for a library card	*Web, Kiosk*
Board of Supervisors compliant forms	*Web, Kiosk*
Building Permit Fee Estimate	*Web, Kiosk*
Directly connect to County staff	*Kiosk*
Download request for proposal/invitation for bid	*Web*
Electronic Mailing List	*Web, Kiosk*
Estimate Electrical Permit Fee	*Web, Kiosk*
File complaints about landlord or consumer problems	*Web, Kiosk*
Find location of closest Library by entering zip code	*Web, Kiosk*
Register & pay for Park Authority classes, camps, & tours	*Web, IVR*
Locate facilities and public transportation	*Kiosk*
Obtain permit/plan status	*Web, IVR, Kiosk*
Pay taxes with credit card	*Web, Kiosk*
Pay taxes via eCheck	*Web*
Pay traffic tickets with credit card	*IVR, Kiosk*
Query current real estate property & tax information	*Web, IVR, Kiosk*
Query Human Services online "Resource Guide"	*Web, Kiosk*
Query for current position on the Housing Waiting List	*IVR, Kiosk*
Query specific court case information	*IVR*
Query status of an inspection, permit, or plan	*Web, IVR, Kiosk*
Query Victim Services data for offender release date info	*IVR*
Register a vehicle	*Web*
Request faxes of court fees and procedures	*IVR, Kiosk*
Renew vehicle registrations	*Kiosk*
Reserve a golf tee time	*Web, Kiosk*
Reserve/renew Library books – search catalogue	*Web, Kiosk*
Reserve a picnic area	*Web, Kiosk*
Report change of address for tax purposes	*Web*
Report a lost pet	*Web*
Report a zoning or noise ordinance violation	*Web, IVR, Kiosk*
Search for information in historical newspaper	*Web*
Search for Health Department clinics by area of County	*IVR*
Search for County agency telephone numbers by keyword	*IVR, Kiosk*
Subscribe to County publications	*Web, Kiosk*
Volunteer to help in the Library or Parks	*Web, Kiosk*
Zoning and Noise Ordinance compliant form	*Web, Kiosk*

2.3 INTEGRATED CONTENT AND DOCUMENT MANAGEMENT

The county is strategically approaching content and document management from an integrated, enterprise approach. Content Management becomes the foundation for organizing and using information from structured data (through business applications), and unstructured data in electronic or imaged documents (word processing documents, spreadsheets, e-mail, and reports). The county is developing an enterprise information architecture which frames this plan and becomes a tool for web services, applications development, and web static page content search and navigation. The solution also includes a rich document management capability which allows more efficient management, flow and storage of vast amounts of required paper records. Since many government processes still require paper records, requiring departments to store large volumes of paper over prolonged periods of time, frequent retrieval of the documents is necessary, time consuming, cumbersome and inefficient. The enterprise document

management technology with incorporated workflow solution will improve business process efficiency and productivity, and integrates the need to view hard copy records with automated applications to complete services. In addition to fast and reliable business processes, this will minimize the demand for additional paper records storage space, protect against mounting storage costs, and reduce human and physical plant asset risks associated with handling of the voluminous units of paper.

The Business Reference Model (BRM) which is the basis for classification of data that aligns with three Business Areas: Service to Citizens, Support Delivery of Services and Internal Operations and Infrastructure. These areas are subdivided into thirty-five separate Lines of Business which cut across all agencies. This BRM provides the foundation for the Enterprise Information Architecture and will allow for the integration of data across Lines of Business within the County. The BRM serves as the foundation for a more exhaustive Taxonomy of Services for the County which is currently under development. When combined with other metadata, this taxonomy will provide for improved search and classification capabilities across application data and static content. This classification of data is the first and most important step in correctly implementing an Enterprise Content Management System.

In addition to continued work on the Information Architecture Framework described above and implementing Documentum's Content Management System, the following has been accomplished:

- Classified the variety of information types currently offered on the Web Site
- Implemented workflow processes and define requirements for contributing content to the Web
- Piloted delivery platforms for Mobile Content (i.e. Wireless "Contact Us")
- Developed an XML Document Model and Metadata associated with static content
- Implemented the Technical Architecture for Content Management
- Continue work on the Information Architecture Framework including:
  - the "Taxonomy of Services" for the County
  - the Inventory of Systems classified by Lines of Business
  - development of an XML Namespace for the County
  - development of repositories for storing XML Objects
- Implemented the Content Management software according to the technical architecture
- Develop the template and methodology for agency web files which are currently on the county's Website

Goals for FY 2006 as they relate to Integrated Content and Document Management are to:

- Convert the content of WEB files to XML
- Deliver XML content to Web, Kiosk and Mobile platforms

Content management intersects with Document Management. For business activities that also rely on a variety of documents, the document management process initiative employs technology at the beginning of a document's life cycle (originated as hard and soft copy) using the system to catalogue and track the documents and enable automated workflow processes through the entire life cycle. This comprehensive approach and associated implementation of technology is called Integrated Document Management (IDM). Through research and analysis conducted in FY 2003, the county found that best in breed products for content management engines also incorporated document management needs. The integrated solution is more cost-effective, and provides a seamless integration for use of information found in imaged documents and information in databases and other systems

required for a complete business transaction. IDM technology provides the ability to organize electronic documents, manage content, enable secure access to documents, route documents and automate related tasks, and facilitate document distribution.

Another component of IDM includes document imaging, which will continue to play a much larger role in the county's business environment. Despite e-government efforts, there remain situations where there is a continued need for paper documents in certain business processes including hard copy documents that need to be reviewed and accessed in processing cases or required archives; this need for hard copy merged with electronic processes can be addressed through the growing scope of imaging technology. Because of legal mandates, many government processes remain paper-intensive, requiring many departments to store large volumes of paper over prolonged periods of time. Consequently, many County departments are exploring technical solutions to alleviate the demand for increased storage space needs, protect against potential disasters that can potentially destroy volumes of important paper documents, and improve business processes. IDM solutions encompass core business practices, as well as provide better archival and disaster recovery capabilities. The County's continuing investment in this technology is closely tied to these business trends as well as the growing document management needs of its agencies including goals for paperwork reduction.

In FY 2005, the County implemented IDM technology for document work flow projects in the Office of the Sheriff, continued work in the Juvenile and Domestic Relations District Court, and the Cross Connections and Elevators sections of the Commercial Inspections Division of LDS in DPWES. Analyses were conducted in the Department of Finance for an automated Accounts Payable imaging system, and document management system for the Department of Family Services. Although the individual departmental business requirements vary for the use of IDM technology, the following benefits and quality improvements has resulted from these projects:

- Increased worker productivity by allowing employees to share and act on accurate information through the delivery of the right documents at the right time
- Enhanced communication and collaboration through shared information
- Improved speed of the information and transaction flow throughout county agencies
- Improved access and security through controlled access to sensitive documents
- Reduced time spent searching for critical documents
- Improved disaster recovery and electronic storage and backup of information
- Reduction in clerical, paper, printing and storage costs

In FY 2006, the County will continue to implement IDM and workflow technology for projects in the Department of Family Services, Office for Children, the Juvenile and Domestic Relations District Court, the Clerk to the Board office, Department of Finance and the Department of Planning and Zoning. Business and technical requirements for these projects will be finalized in early FY 2006 with implementation beginning at the end of the fiscal year. Below are the specific projects that are further described in Section 3 of the IT Plan.

- Develop and implement Phase 2 of the JDRC Document Management System
- Develop Phase 1 of the Clerk to the Board's Document Management system
- Develop and implement Phase 1 of the Office for Children Document Management System

- Develop and implement Phase 1 of the Department of Family Services' Document Management System
- Develop and implement the DPZ Content Management System for the county's property files, Zoning Ordinance and Comprehensive Plan
- Continue solution design work in Department of Finance

An important consideration for the IDM projects will be to provide for remote access for workers that heretofore relied on paper-intensive processes and have no capability to backup critical paper files and documents. These projects will also facilitate disaster planning efforts to ensure business continuity. Overall, document management and imaging projects address operational efficiency and effectiveness, with the capability to reduce costs, accelerate business processes, ensure regulatory compliance, and improving communication in the agencies. These projects, combined with the potential for integration of content in data-bases also supporting the business process, will result in a seamless process for information utility.

2.4 CUSTOMER RELATIONSHIP MANAGEMENT (CRM)

The expectations of government services continue to change dramatically. Citizens want to interact with government through the channels that best suit their needs. Fairfax County continues to enhance the services with Customer Relationship Management (CRM), technology applications. Incorporation of *Internet Quorum*' (IQ), and '*IPhinity*' call distribution technology has yielded numerous benefits for constituents and multiple County offices and agencies. Significant staff productivity and efficiency improvements have been achieve in supporting information exchange with citizens through multiple communication channels, in-person, telephone, e-mail, web, and Kiosk. More opportunities are allowed County staff to respond better and be involved in the mission and goals of their agencies through the usage of CRM. Fast and convenient access to services and information assist the agencies in responding to citizens based on the needs and preferences.

The successful installation of IQ in 1999 for the offices of the Board Supervisors and the Clerk to the Board to record, route, and manage interactions with constituents and organizations has expanded throughout the County. The Web enabled system '*Internet Quorum'* replaced several obsolete custom applications and provided the expansion of IQ to Office of Public Affairs, Consumer Protection, Human Rights office, Department of Public Works and Environmental Services, County Executive and the County's Legislative function within the County Executive's office, Department of Purchasing & Supply Management, Department of Transportation and Department of Human Resource.

The Clerk to the Board of Supervisors uses the IQ Boards and Commissions module to allow staff to track appointments and nominations to boards, committees and councils and to keep a complete correspondence history regarding

contact with these individuals. Consumer Protection Division's modules include Complaint Tracking, License Administration and Taxicab Inspections. The systems enable staff to rapidly open and begin investigating cases. By expediting the administrative components of case investigations, the initial response time has been reduced, resulting in earlier detection of consumer protection violations. The historical research required to discern whether businesses are repeat offenders or not, and how past cases were resolved is now expedited; cross-referencing cases between investigators allows

department staff to share online information pertaining to the same or similar consumer protection violations, and facilitates collaboration between department investigators on complaints and resolution techniques. The system also allows citizens to access complaint histories of businesses online in order to research and better determine the pros and cons of doing business with those merchants. In addition, the system allows Fairfax County Police access to information to check the licenses of all solicitors, peddlers, pawnbrokers, massage therapists, taxi drivers, etc.

The Office of the County Executive uses the IQ Legislative Tracking Monitor application to assist County agencies to monitor, review, respond to and track state legislation when the Virginia General Assembly is in session. The system includes the automated downloading of legislative bill information from the Commonwealth's Legislative Information System, eliminating the need for a legislative aid to manually perform the data entry task and faster ability of the need for County staff to search for bills and comments. The Office of Public Affairs uses this system and includes publications and brochure tracking and workflow. Other benefits include elimination of the cumbersome process of manually tracking constituent requests with a more efficient means of processing and tracking mandated Freedom of Information requests. The Human Rights Commission uses the system to create, track and report on case workflows allowing the HRC investigators to meet multiple requirements. It also streamlines complex discrimination processes and addresses privacy concerns for investigator and conciliators.

The FY05 *'IPhinity'* call center distribution application implemented for Human Services Consolidated Services Planning (CSP) call center offers efficiency in supporting the growing number of people seeking assistance from social services agencies with limited staff geographically disbursed at various sites. Accurate call management, collaborative capabilities, and workforce management tools aid in access to legacy systems, reduce paperwork time, and increases employee productivity. Centralized control to all call center resources, estimated wait time, skills-based routing, virtual call center processing, self-service options, callback messaging, and emergency recording, are all standard features available in the easy-to-use system administrator management interface.

'*IPhinity*' is customizable to route incoming contacts based upon selected criteria, set levels of access, record specialize voice promotes, manage calls based on specific business requirements, and track all interactions to ensure closed-loop resolution. CSP will be able to monitor and manage workload and performance with a comprehensive set of analytical tools for real-time and historical reporting. Computer Telephony Integration (CTI), internal calls or transferred calls will be presented to case worker along with a "screen-pop" of information from agency case systems and databases relevant to the citizen's call. This integrated approach will give CSP the opportunity to better develop relationships with citizens and more effectively focus resources to address their needs.

Future Enhancements

Future enhancement of the county's CRM initiative include implementing enterprise 311 Call Center to allows citizens to interact with the county through a single, clear point of entry eliminating the need to navigate through hundreds of telephone numbers to find the appropriate service department and reduce the calls to 911 for non-emergency help and assistance. A virtual 311 Call Center will integrate existing call center assets, improve the citizen's communication and experience with Fairfax County Government and serve as the County's primary unified communication gateway for all residents and business. This single point of access between citizens and local government would standardize call taking operations and enable employees to answer citizen questions and log service requests. Call takers will be able to respond to a broad range

of questions spread across multiple databases which ensure all call takers have the most current information at their fingertips, regardless of the source. Based on department business rules, call takers will process request for service or issues using the comprehensive and flexible workflow tool provided to integrate routing to appropriate staff members. Service level agreements and partnerships with appropriate state, federal, and private entities that are partners with the County in service delivery will be established to further meet the citizen service needs and increase confidence in government. Other modules will be added, including integration of the County's Geographic Information Services (GIS) which supports the pinpointing of related complaints or contacts within a specified geographic area.

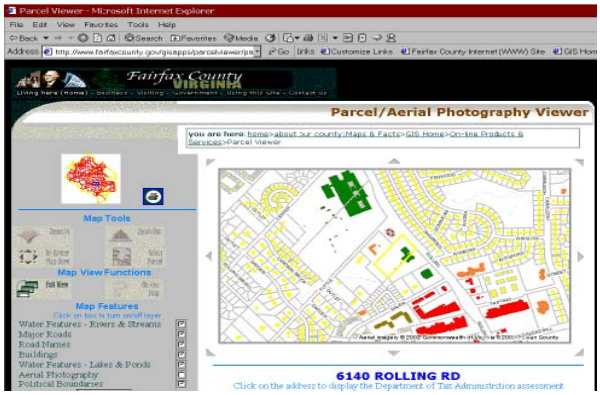
It is becoming critical to integrate CRM technology applications and communication channels with a common interface to supply one-stop customer service and a single citizen view within the County. CRM technology applications improve service delivery aspects to the citizens before, during, and after contact. An enterprise CRM application would consolidate citizen information and enable optimal service and rapid citizen response. Strategic alignment and integration of IT investment with IQ, *IPhinity*, and FIDO are the building blocks to support the usage of an enterprise case management and better inform the citizens and increase satisfaction. It will also provide greater visibility into the top concerns of constituencies which enables agencies to proactively address local matters of interest and concerns, resulting in both service improvements and a reduced volume of incoming inquiries.

An enterprise-wide, automated, full function distributed CRM solution will organize the tracking and monitoring of communications, cases, contacts, events and complaints. It will offer a Web-enabled solution that will provide a robust, consistent foundation for managing all citizen relationships and support a knowledge-based, centralized repository of data allowing the County to leverage emerging technologies as it move's into a more unified messaging environment. Live help using a Web interface, such as instant messaging, will give users another method for receiving real-time support, and will incorporate multi-media and other forms of digital and wireless communications to improve the user experience. Equally important it can reduce communication workload; improve tracking and access to historical data through one system to ensure proper follow up and closure meeting expectations and managing costs and staff productivity.

Enterprise CRM supports a holistic view to aid in making well-informed decisions about service delivery to the County's diversified population and improvement of communication through seamless unified access of information via the County's web site, Kiosk, IVR systems, cable TV, in-person, as well a live 311 Agent.

2.5 GEOGRAPHIC INFORMATION SYSTEM (GIS)

Fairfax County's GIS has continued its growth in



direct GIS users as well as indirect users, working with applications that now include GIS embedded as part of their operation. Some of these tools are available to the public via the internet, as well as county staff on the intranet. These developments enabled GIS to meet its goals for 2005 with a range of activities. Overall GIS usage by the public and by County staff increased as a result of heavier use of existing applications and several new applications including the new My Neighborhood application, the internal crime statistics mapper,

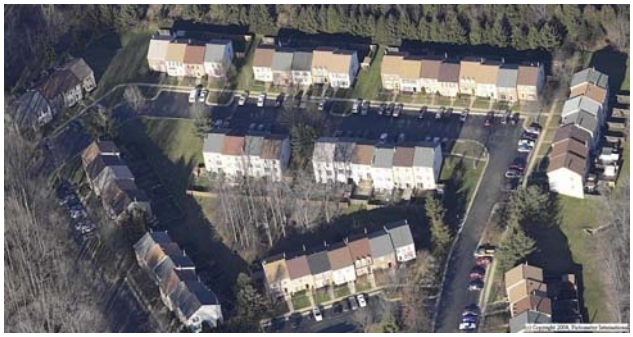
and the IQ GIS interface for BOS offices. The Digital map viewer increased usage nearly 100% as more property/zoning and other maps are now viewed/downloaded via the internet. The amount of data available in the GIS data warehouse was also significantly increased. Forty-five new layers of data were added in FY 2004 and 2005. An additional 68 layers of national and international data was also added. The GIS data warehouse now holds over 470 layers of data. The overall size of the vector data has increased to 27.7 GB, and the raster data is now over 1.4 TB. Vector data includes all of the data layers listed in Table 1 – it is data represented by points, lines or polygons. Raster data includes the digital imagery: raw photographs, orthophotos, and oblique imagery.

The amount of data within the layers has also increased. Table 1 illustrates some of the most significant layers and their 2005 and 2006 values:

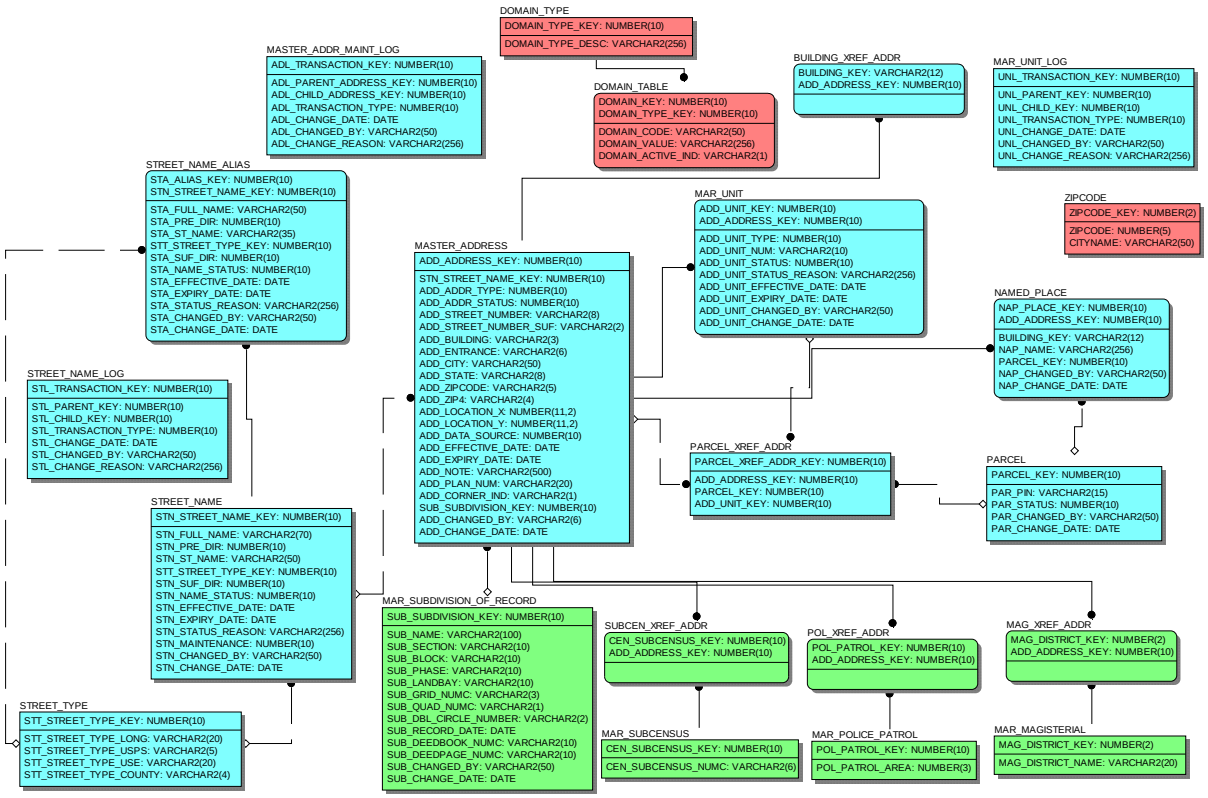
Table 1

Data Layers	FY 2005	FY 2006
Parcels	341,000	343,500
Addresses	360,000	365,000
Zoning Overlay Districts	200	400
Zoning Cases	8,200	14,600
Building Footprints	248,000	248,000
Rooftop Outlines	0	4,000
Miles of Roads	4,000	4,800

In FY 2006, the GIS office will continue to increase the number of applications that include GIS within them, further enhance existing web-based GIS applications (for instance My Neighborhood). The GIS data will continue to be enhanced, and the quality improved as it was in FY 2005 where the accuracy of the voting precincts, school planning areas and zip codes was improved to the accuracy of the underlying parcels.



Having key county data available digitally through the GIS provides a range of benefits to constituents as well as county staff. The orthoimagery is widely used within GIS as well as over the web. Because the parcel and zoning data is now maintained digitally, production of the county's parcel and zoning books has been greatly accelerated. Many times consuming manual steps are now replaced with the digital production process. Additionally, the changes to those maps are posted to the internet daily, providing web users of the Digital Map Viewer with the latest versions of the maps. Prior to that application those maps were printed for distribution annually.



The breadth of GIS utilization across the County, and the extent of its integration into the overall IT architecture have builds on the award winning plans and efforts of the preceding years. In FY 2004, the County's GIS program received a "Best of Breed" award in the 2003 Digital Counties Survey. This survey and award recognition was conducted by the Center for Digital Government, in partnership with the National Association of Counties. Other awards to county GIS programs include the VA Governor's Technology award for DPWES' use of GIS in routing refuse collection vehicles. Fairfax County's GIS has received international recognition via the Environmental Systems Research Institute (ESRI) Special Achievement in GIS (SAG) Awards for both the GIS Branch work and the countywide efforts in GIS. It also received recognition from the National Association of Counties for its use of GIS in the reapportionment process. The increasing use of GIS in Agency operations is an important goal of GIS and the recognition by Governor Warner highlights that successful and innovative growth in use.

Updating of the 1997 aerial photography was continued with about 100 square miles of the northwest quadrant of the County having orthoimagery delivered. The Northeast quadrant was flown in March 2003 and the orthoimagery was delivered in late spring 2004. The Southeast quadrant was flown in March-April 2004. Orthoimagery will be delivered in mid FY 2005. This will complete the first orthoimagery update cycle. A complete quadrant was updated in 2001, 2003, 2004 and 2005. The 2002 update was skipped due to the availability of the State imagery. The two images are of the same area of the county. The first is an orthoimage, taken directly over the homes, while the second is oblique, taken from the side rather than directly overhead.

The underlying GIS hardware and software architecture was significantly enhanced. The Oracle-SDE data warehouse was moved to the County's Enterprise Sun server, providing greater

reliability and speed. The Citrix application servers were upgraded and now have over twice the capacity as the previous servers. Day-to-day operation of those servers is now the responsibility of DIT's Technology Infrastructure Division. This allows the GIS staff to focus on new layers and applications. The County also received orthoimagery for the entire county area, plus surrounding jurisdictions through Virginia Geographic Information Network's state-wide orthoimagery acquisition in 2002.

Oblique aerial imagery was flown and delivered and brought online in FY 2004, Oblique imagery shows the sides of buildings, which orthoimagery does not. The side views enable County Assessors to more efficiently view and determine property values. The views also provide public safety officials with key information in planning emergency response, since they can see windows and doors and determine dimensions and heights above the ground.

The master address database project continued and commenced building the actual database, including cleaning and verifying the address data being entered into it. The project will now continue through FY 2005. Addressing data is a core component of the County's GIS. Because the vast majority of County data is about a specific location within the county (approximately 80-90 percent of municipal data are locational), it is important to ensure that the data can be linked to the GIS in order to take advantage of "place-based reasoning" and analysis. The most common locational link is property address. The resulting system will provide current and correct addresses to all County agencies. It will standardize the address format and simplify linkage to address by making the data available on an enterprise server using County standard RDBMS. The planning and requirements done so far on the Address database have assisted in the design specification of at least two major database systems being planned and implemented for other agencies: The new Integrated Assessment System (IAS, replacing the Real Estate Assessment and Billing System (REABS) and the new Fairfax Inspections Database Online (FIDO) the replacement for the Inspections Services Information System (ISIS). The Master Address Repository (MAR) data scrubbing was completed in mid FY 2005 along with the address maintenance tool. The data and application now provide the county with a single, authoritative source of address data. It also enabled a mainframe application to be retired. Initially four applications link to the MAR (FIDO, LDS, GIS and PAMS). The data model for the MAR is displayed in the following figure.

The pioneering street centerline data sharing agreement with the Virginia Department of Transportation has resulted in the development of a commonly defined centerline file for all of the northern Virginia counties. This will enable the use of a regional centerline file for emergency preparedness planning and response, as well as for regular activities such as transportation planning and vehicle routing. In FY 2004, the State's GIS group (Virginia Geographic Information Network) augmented our centerline data with VDOT identifiers. This will enable the County to obtain specific VDOT data on County roads. The completed data was delivered to the county in FY 2005 and a maintenance approach was established to enable both the state and to maintain and share centerline information so that each participant has up to date street centerline data.

The GIS Branch continues to provide County employees support via the DIT Technical Support telephone numbers. Pagers are issued to the GIS staff to provide quick callback response to users.

Administrative Efficiencies and Service Quality Improvement

Over 25 county agencies now use GIS to some extent in their operations, including the GIS Branch itself.

- The transition to digital property and zoning information now enables the GIS

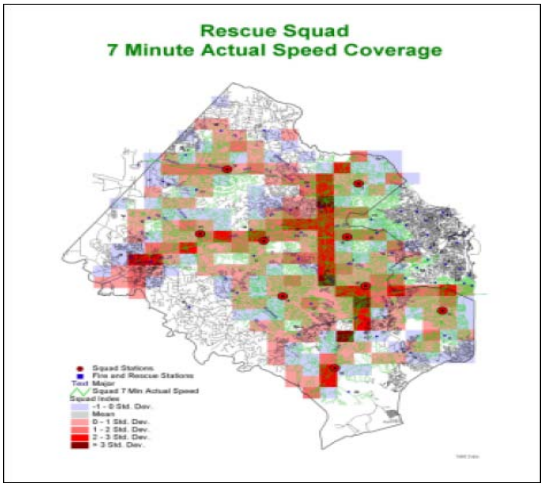
Branch to maintain these maps daily. These maps are processed and made available for County staff and public users via the web. Because the production process is digital, more map series can be easily added. In FY 2005 a soil series map was added to the current set of maps.

- The centerline file was modified to reflect the Northern Virginia common centerline elements and made available to County agencies.
- Substantial savings are being realized in the Department of Public Works and Environmental Services through the use of GIS. It was recognized by the State of Virginia for its integration of GIS with refuse vehicle routing and the subsequent flexibility and cost savings.
- GIS is being intensely used by the Department of Public Works as part of the perennial streams evaluation project. GIS technology has enabled the mapping to be completed in weeks rather than months.
- The Department of Public Works has digitized the sanitary sewer lines into the GIS and maintains them regularly. Storm sewers are in the process of being digitized, and should be complete by the end of FY 2005.
- The Department of Zoning is digitizing the Comprehensive Plan into the GIS for easier maintenance and viewing. That work was completed in FY 2005.
- The GIS now contains data from Fairfax Water and the City of Fairfax on hydrants and water mains.

The Department of Planning and Zoning staff is using GIS programming and analysis to tackle problems that would have ordinarily been overwhelming manual tasks. Such as the assignment of regional transportation analysis zone numbers to each of Fairfax County's 340,000 individual parcels. GIS programming now makes this a routine and quick process. GIS is streamlining the Annual Plan Review (APR) through the use of a new Comprehensive Plan Amendment Tracking System (CPATS). In addition, GIS is used to with CPATS to generate notices for plan amendment applications. User errors are largely eliminated and the latest information is always used. GIS is integrated into DPZ's Land Information System (DPZLIS) The Staff Report Locator Map Production System module of DPZLIS is used to quickly create staff report maps by interfacing. Environmental planners use DPZLIS to generate environmental assessments of LDS or APR application subject areas. DPZLIS is also used widely by staff to generate custom page size maps of anywhere in the county they desire. These products have been especially beneficial in Zoning Enforcement issues. Public users can now check on the status of permits for development and view maps of the work via the internet.

The Office of the County Executive is using GIS extensively in the interdepartmental Strengthening Neighborhoods Building Communities effort. That program does extensive analysis of demographics to identify areas to focus strengthening efforts.

In health areas, GIS has been used as part of the West Nile Virus planning and response, as well as tracking tuberculosis in the County. Previously the GIS had proven its value in the canker worm outbreak in FY 2001 (and before that the Gypsy Moth outbreak). GIS enabled County staff to quickly identify residents who would be affected by planned canker worm spraying and contact them ahead of time. The GIS also enabled them to provide spraying coordinates to the helicopter spray crews so that balloons would



not have to be used. This was a significant time and cost savings.

The Fire and Rescue Department (FRD) has been making substantial use of GIS and is experiencing significant savings. For instance, in the process of responding to Fire Hydrant and Insurance queries, the GIS saves about 50 percent in staff time to determine the distances. A new Web application being planned will provide even more savings once it is developed and online. Another example of FRD's savings is in identifying the five-minute response time areas for stations — a factor crucial to establishing response areas that are within response time limits. Staff savings were estimated at 98 percent in doing that countywide analysis.

The Police Department had significant success in its use of GIS in crime analysis. In two separate instances, the Department's crime analysts were able to identify spatial patterns in crime incidents and successfully predicted the subsequent crime locations. In both instances suspects were arrested. Daily maps are now available showing the previous day's crime statistics.

GIS was used extensively in planning for and responding to flooding from Hurricane Isabel.

In FY 2006, the GIS Branch will initiate more strategic interaction with County agencies to foster their development of GIS capabilities and integration into their business processes. The preceding years have seen GIS take root in most county agencies. The program will continue to expand and is an important tool for Homeland Security and Emergency Management efforts. The challenge is to continue foster, broaden and integrate growth of need and use with management involvement and support.

The GIS Branch is also pursuing a number of strategic activities to foster the sharing of GIS data and resources, particularly in the area of homeland security. The County is a member of NACo's GIS committee which looks at key GIS issues affecting counties. GIS staff has also participated in planning the implementation of the Geospatial One Stop portal (*http://www.geodata.gov/gos). Lo*cally, Fairfax County is a member of the Northern Virginia GIS managers group, an informal group that regularly meets to coordinate activities. The most recent accomplishment is the development of a regional centerline file structure that will be part of a state wide centerline file project. The Branch works closely with the State's GIS agency (Virginia Geographic Information Network) and jointly participated in a national summit to further the coordination, cooperation and collaboration on GIS issues and data. Internally, the GIS Branch has been working with the County's Emergency Management Office to identify possible funding opportunities for some of the County's GIS data and/or hardware. The GIS Branch now directly participates in the Emergency Operations Center when it is activated. In addition, the GIS Branch is working with the Police Department to develop a web-based crime mapping application that will enable police to easily view up to date crime statistics and their locations. Some of this functionality will also be made available to the general public. In FY 2005, the county's GIS manager became a member of the newly formed COG CIO's GIS subcommittee, working on regional interoperability initiatives.

Additionally, there will continue to be emphasis on data quality, system reliability and connectivity as well as implementation of new GIS applications. These aspects are crucial to implementing GIS as a data "utility" across the County so that users at any of the County's offices can "turn on" their GIS "data tap" and have all of the data they need available to them immediately. Data quality is a paramount issue. Rigorous Quality Assurance/Quality Control measures have been implemented on the parcel data updates. Similarly, rigorous quality standards have been developed for the aerial imagery being acquired. System reliability is becoming an increasingly crucial issue as more users integrate GIS into their daily operations. To ensure that the technology is available to them,

the GIS Branch is procuring additional servers and software to provide redundancy in case one of the systems goes offline. The GIS Branch is now monitoring the performance of its applications while the DIT's Technology Infrastructure Division monitors the underlying hardware and communications links to ensure reliability. Critical applications are monitored around the clock and staff members are on call if system outages occur outside of work hours.

System connectivity is essential for thorough integration of GIS into County operations. It involves establishing robust, reliable and preferably real-time links between the GIS data warehouse and other vital county databases like the new IAS real estate system, the Land Development System (LDS) and others. GIS staff will be working closely with other agencies such as the Department of Tax Administration and the Department of Planning and Zoning to ensure optimum connectivity between the GIS data warehouse and their operations as well as with DIT to help provide sufficient bandwidth to offices that require it for GIS.

Finally, as the GIS Branch works closely with other agencies, staff will design and implement specific applications to enable users to more easily do the spatial analysis and querying they need to do with the GIS data. These custom applications will not only decrease the time necessary to do the queries, but it will increase the number of staff that can use the data since the applications will be designed specifically for their operations.

2.6 FAIRFAX INSPECTIONS DATABASE ONLINE (FIDO)

The Fairfax Inspections Database Online (FIDO) project (formerly known as ISIS Replacement) is a strategic initiative to consolidate inspection services provided by multiple County agencies into a single software solution and to implement e-permitting capabilities for customers. The FIDO project will replace more than two-dozen existing databases and systems spanning four user agencies. The new system will enable all of the user agencies to work more collaboratively in their inspection and code enforcement efforts. This multi-million dollar, multi-year project connects four agencies in providing permitting, plan review, inspection, complaints management, and environmental health related services. Goals for this project include moving from the mainframe environment to a platform that enhances multi-agency access and participation in the affected processes, enhancing customer service by streamlining the permitting process, and facilitating the performance of as much business as possible via the Internet. It is envisioned that the new system will provide online permitting, facilitate enhanced plan review capabilities, integrate with the GIS to capture and present data in a graphical format, integrate with the existing Land Development Systems' (LDS) database to ensure the seamless availability of land development data, and provide a virtual one-stop shop for processing permit applications.

The approach for this project represents a concerted effort to harness the expertise of all stakeholders in the design, acquisition, and implementation phases to ensure a seamless, streamlined integration with all other pertinent systems. A project steering committee comprised of local and national agencies, both public and private, was formed to provide guidance in these matters. In addition, teams of representatives from each of the core user agencies and the Department of Information Technology (DIT) have been established to assist in the management of this effort and for the coordination of gathering system requirements from the stakeholders. Customers and county staff that use the system on a daily basis formed numerous workgroups to provide critical input for the development of the user and system requirements. Additionally, these workgroups included staff of the Health Department, Department of Tax Administration, Fire and Rescue Department, Department of Planning and Zoning (DPZ), Department of Public Works and Environmental Services (DPWES),

Department of Finance, and DIT. The collaborative efforts of these groups provided input on the needs of all the beneficiaries, with a concentrated focus on the day-to-day customers and the numerous organizations that rely on the County for permit processing and inspection information. Many of these teams continue to work on the configuration and implementation of the new system. The vision and long-term goals established for FIDO require that the project be divided into three manageable segments. Although the primary focus of this project is the replacement of the legacy Inspection Services Information system (ISIS), the first two phases that have been implemented include the Complaints Management System for the DPZ, Health Department and the Contractor Licensing modules for the DPWES and the Health Department.

The FIDO system creates adaptability on a new platform that will serve as the foundation for all future e-permitting enhancements while providing immediate additional functionality and a streamlined process. The project will include the acquisition of a web-enabled system with the capability to provide access to permit information and the permit process 24 hours a day, 7 days a week and the availability of real-time wireless inspection results. The system will provide a virtual one-stop shop offering e-permitting opportunities for many projects not requiring plans. The replacement system will also provide managers the ability to perform an ongoing analysis of efficiency and effectiveness of resource utilization (including tools such as workflow processing, deadline reminders, identification of bottlenecks within the process, and benchmarking indicators).

Anticipated future enhancements to the new system include the electronic submission, distribution and review of plans and permit applications by all required review agencies; the issuance of permits online for complex projects requiring the submission of large scale plans; the use of project-specific extranet sites to facilitate communication and to create a more collaborative plan review and permit issuance process.

The completion of this project will position the County to utilize additional e-government capabilities and will more fully integrate all of the land development processes to facilitate information sharing and one-stop permit processing. While enhancing customer service, this project will allow greater and immediate public access to permit related data, which in turn reduces customer inquiries and saves significant amounts of staff time. The management of the land development process will be enhanced by the ability to track construction projects throughout the project lifecycle. The consolidation of related data into a single system will improve the process as well as the consistency and reliability of information provided to customers. Finally, the vastly improved search and retrieval capability will facilitate research by the public and the County.

The early stages of this effort focused on the collaborative development of a comprehensive Request for Proposal (RFP) to procure an appropriate solution for the e-permitting system and to replace the multiple stand-alone inspection related databases being utilized by the Fire and Rescue Department (FRD), as well as the functionality required to manage complaints for the Department of Planning and Zoning along with ISIS. In FY 2003, a comprehensive review of vendor proposals - including both custom solutions and COTS packages was completed. The review process included the formation of Selection and Technical Advisory Committees (SAC and TAC) that involved representation from all key user agencies as well as from the DIT. From this process, the Hansen, Inc. solution was selected. In FY 2004, the focus shifted to configuration and implementation of the new suite of software products. The result has been the successful implementation of the first two phases of the project – Complaints Management and Contractor Licensing.

The architecture for the new system is compatible with the existing LDS client/server architecture, which includes an Oracle database. This effort includes replacement of the following systems:

- Inspection Services Information System (ISIS)
- Building Code Services Online (ISISnet)
- ISIS Handheld Inspections System
- Permit Applicant tracking System
- Fairfax County Contractor Licensing Database
- Elevators Inspections Database
- County Cross-connections Database
- HMIS system for Environmental Health Services
- HealthSpace system (an interface to the State HealthSpace system will remain)
- Residential Use Permits (RUPs) portion of the PAMS Application
- Non-Residential Use Permits (Non-RUPs) Application
- Multiple stand-alone Fire Prevention Services Databases
- Multiple stand-alone Environmental Health Services Databases
- Paradox Complaints Tracking System

The FIDO solution is consistent with County standards and fits well with County's e-government strategy of using emerging technologies to enhance services. In FY 2005, much of the work for design, construction, and implementation of the ISIS Replacement portion of the project will be conducted. (See section 3 for project information).

2.7 TELECOMMUNICATIONS

Voice communications is a bedrock technology in today's technology architecture. As government is asked to do more with less, stretching limited financial and human resources, it relies upon efficient voice communications to improve efficiencies and meet the growing needs of citizens. Whether it is citizen access via e-government, efficient management of government information, the advancement of education, the safety of our children on school buses, or most recently, homeland security, voice communications plays a critical role.

Integrating voice, video and data communications onto a common structure, which has been envisioned by the industry since the 1980's, is now becoming a reality. This convergence will bring tremendous benefits to enterprises such as Fairfax County that utilize large and disparate voice and data networks. New types of voice service platforms that support data application integration are commercially available and are seen as a cost effective means to improve the County's service to its citizens. Currently, that fully converged world is the provenance of "early adopters". After decades of high quality phone service provided through the traditional telephone networks, users expect new systems to have consistent voice quality, with never a doubt that they will hear dial tone when they lift the telephone receiver. At this point the industry is in the process of determining how to ensure 'five nines' quality in converged networks.

The long-term strategy for Fairfax County is to implement Voice over IP (VoIP) services and obtain the maximum utilization of its networking capabilities as well as garner the advantages in functionality and features that this leading-edge technology provides. Pure VOIP technology will soon be stabilized to the point where the risk of enterprise implementation will be acceptable to the County. As a result, DIT will implement a strategy for voice services, utilizing convergent-IP ready technology, over the County's fiber I-Net. This strategy includes a solution architecture that is scalable to support the variety of county sites and agency business requirements distributed over 400 square miles, and remote access needs. The strategy uses IP-based telephone service at the smaller sites, so that they can also be brought into the common voice enterprise architecture, avoiding investment in larger more expensive equipment. This approach is not without some service quality risks. Careful planning will significantly reduce the risks involved in converging IP data traffic with IP voice traffic onto one data network.

We believe this strategy is both prudent and forward-looking. It will position the County to increase its use of advanced convergent technologies as these technologies mature. It allows the county to leverage wide-area fiber network and platform infrastructure for both voice and data, and facilitates reductions in other voice service operational costs. The plan is in full alignment with the County's principle of implementing contemporary, but proven, technologies, optimizing IT investments and creating more operational cost efficiencies.

The following six strategic goals for Fairfax County voice services were developed and endorsed by senior County management. These goals are the building blocks of Fairfax County's Strategic Voice Technology Plan.

Goal 1: Optimize the total life cycle cost for voice services across the County Government. Make use of available facilities, such as the I-Net to reduce operational costs. Protect County investment in plant and equipment.

Goal 2: Provide countywide common voice architecture. Allow any County phone instrument to be accessed from the primary voice network. Move to a common, standards-based architecture as industry standards become stable.

Goal 3: Provide remote technology network access for voice and data to expand secure remote access uses and Telework. The switch architecture should provide a seamless extension of voice communications and allow remote access to telephone features.

Goal 4: Provide compatibility with "best-in-class" citizen access technologies and processes.

Goal 5: Develop a "survivable" architecture that is scalable. In the unlikely event of the loss of a major County government facility, e.g., the Government Center or the Massey Complex, the architecture of the County voice communications systems should be re-configurable to permit continued government operations without degradation.

Goal 6: To converge voice and data onto one network. The switch architecture should support convergence of voice and data onto a single IP switching fabric.

To achieve the Goals for next generation voice switch architecture, as discussed above, there are a number of technical requirements that the target architecture should meet. Installation of independent phone systems for various sites--the future switch architecture is minimized, and it must support the County's integrated network philosophy with a single logical architecture. The solution must address the large number of County locations of various characteristics, supporting a variety of business and operational needs of county agencies, must be scalable and expandable, and should support a range of configurable telephone instruments and feature sets. The solution must also address the following requirements:

The voice network infrastructure must support a wide range of features, such as:

- Constituent Relationship Management (CRM) Technology
- Automated Call Distribution/ Interactive Voice Response
- Computer Telephone Interfacing
- Remote Access and Telework
- Unified Messaging
- County-wide Voicemail
- Inbound Caller ID
- Teleconferencing

The architecture must also facilitate development and rollout of a uniform dialing plan across the County offices, and fully support requirements for enhanced 911 Automatic Location Information.

The transformation of Fairfax County's voice platform is a significant endeavor that will require a great deal of planning and thoughtful implementation over many months, but it will

have a revolutionary impact on the way that the County conducts business and provides services to its citizens. Voice over IP (VoIP) is clearly the strategic technology that the County will move toward, using a phased approach to minimize the risk at the two core locations. The new voice network infrastructure will provide uniformity of telephone features at all County locations and will be the foundation upon which to integrate function specific call centers, creating a virtual Constituent Contact Center that will streamline incoming call processing while reducing call center operating costs by maximizing agent productivity and lay the groundwork for the incorporation of future appropriate technologies.

In FY 2005, requirements for an RFP were developed. The County will select a competitive solution and begin implementation in FY 2006. Implementation of this comprehensive project will continue for several years in incorporating all facilities, implementing new functionality and integrating the voice and data platforms.